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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/767,801 | 01/29/2004 | Ian Agranat | A2002-700010 | 5561 |
| 37462 | 7590 | 02/19/2008 | EXAMINER | |
| LOWRIE, LANDO & ANASTASI, LLP ONE MAIN STREET, SUITE 1100 CAMBRIDGE, MA 02142 | | | SKED, MATTHEW J | |
| | | ART UNIT | PAPER NUMBER | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/767,801 | AGRANAT, IAN | |
| | Examiner | Art Unit | |
| | Matthew J. Sked | 2626 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-49 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-49 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 January 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 1-49 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of corresponding claims 1-49 of copending Application No. 10/903,658. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Objections

3. Claim 40 is objected to because of the following informalities: in the last line change "an" to —and--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 9, 30, 38-40, 43-46 and 48 are rejected under 35 U.S.C. 102(e) as being anticipated by Schaphorst (U.S. Pat Pub. 2004/0107104A1).

As per claims 1 and 48, Schaphorst teaches an apparatus and method for identifying animal species from their vocalizations, comprising:

a source of digital signal representative of at least one animal candidate vocalization (microphone for receiving sounds of birds, paragraph 22);
a feature extractor that receives the digital signal, recognizes notes therein and extracts phrases including plural notes and that produces a parametric representation of the extracted phrases (extracts phrases and determines parameters of each phrase, paragraphs 28-32); and

a comparison engine that receives the parametric representation of at least one of the digital signal and the extracted phrases, and produces an output signal representing information about the animal candidate based on a likely match between the animal candidate vocalization and known animal vocalizations (compares the parameterized phrases with stored parameters and identifies a bird based on the comparison, paragraphs 34-39).

6. As per claim 2, Schaphorst teaches a transformer connected to receive the digital signal and which produces a digital spectrogram representing power and frequency of the digital signal at each point in time (spectrograms, Figs. 3 and 4).

7. As per claim 3, Schaphorst teaches the transformer is a DFT having as an output signal a time series of frames comprising the digital spectrogram, each frame representing power and frequency data at a point in time (vocalization is digitized and must inherently be converted in the frequency domain using a Fourier transform in order to build the spectrogram, Figs. 3 and 4).

8. As per claim 9, Schaphorst teaches a transformer connected to receive the digital signal and which produces a signal defining a parametric representation of each note (spectral analysis determines the spectral parameters of each phrase, paragraph 32).

9. As per claim 30, Schaphorst teaches a database of known bird songs (database of bird calls, paragraph 38).

10. As per claim 38, Schaphorst teaches a digital filter interposed between the source of a digital signal and the signal analyzer and classifier (comb filter, paragraph 22).

11. As per claim 39, Schaphorst teaches a microphone (paragraph 22).

12. As per claims 40 and 46, Schaphorst teaches an analog-to-digital converter to receive an analog signal from the microphone and to produce the digital signal (paragraph 25).

13. As per claims 43-45, Schaphorst teaches an array of microphones each omnidirectional (multiple microphones focused on a particular azimuth, paragraph 48).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 4-7, 19-25, 32 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Casey (U.S. Pat Pub. 2001/0044719A1).

As per claims 4-7, Schaphorst does not teach representing the power or frequency in the logarithmic scale and normalized relative to a reference.

Casey teaches a method for feature extraction of animal vocalizations (paragraph 112) in which the power and frequency are represented logarithmically and normalized (paragraphs 77, 113 and 114 and Figs. 11a and 13).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to normalize and represent the power and frequency in the logarithmic scale as taught by Casey because it would enhance the features of the signal for extraction without increasing the signal to noise ratio.

16. As per claims 19-25, 32 and 49, Schaphorst does not teach the comparison engine comprises a set of hidden markov models, a fixed-covariance matrix of the likelihood of producing an observation, wherein the HMM has a plurality of sets of states representing notes and gaps in the vocalization

Casey teaches the classification of vocalizations using a HMM using a multi-dimensional Gaussian distribution and a covariance matrix, wherein the HMM represents a model of animal vocalizations (paragraphs 98-110).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to use HMM models to represent the vocalizations in the comparison engine as taught by Casey because HMMs are optimized for types of classifications where the previous samples influence the current sample such as in vocalizations.

17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Burges et al. (U.S. Pat. 7,082,394).

As per claim 10, Schaphorst does not teach the feature extractor comprises a discrete cosine transform transformer.

Burges teaches a method for extracting features from vocalizations for classification which extracts DCT coefficients during feature extraction (col. 20, lines 4-21).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to extract DCT coefficients in the feature extraction because, as taught by Burges, it would suppress specific easy-to-identify distortions (col. 20, lines 4-21).

18. Claims 11, 12, 16-18 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Patrick et al. (U.S. Pat. 5,956,463).

As per claim 11, Schaphorst does not teach a time normalizer operative upon each note recognized in the digital signal before the transformer receives the digital signal.

Patrick teaches a system for animal vocalization analysis that normalizes the samples prior to classification (col. 7, lines 25-34)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to time normalize the signal as taught by Patrick because it would enhance the features of the signal for extraction without increasing the signal to noise ratio.

19. As per claim 12, Schaphorst does not teach a cluster recognizer that groups notes into clusters according to parametric representations.

Patrick teaches clustering the sample calls based on Euclidean distance between the parameters (col. 7, lines 25-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to group the notes into clusters because as taught by Patrick, this would screen out extraneous vocalizations prior to the identification stage (col. 7, lines 19-24).

20. As per claims 16-18 and 31, Schaphorst does not teach the comparison engine comprises a neural network trained to recognize likely matches between the animal

candidate vocalization and known animal vocalization including an SOM and Grossberg layer.

Patrick teaches classifying the vocalization using a multilayer, perceptron type of neural network (col. 7, line 53 to col. 8, line 11).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to use a neural network as taught by Patrick because this is a robust and proven tool for pattern classification.

21. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Patrick and taken in further view of Official Notice.

Schaphorst and Patrick do not teach the cluster recognizer use K-means, SOM or Linde-Buzo-Gray.

However, the Examiner takes Official Notice that these algorithms are notoriously well known in the art clustering algorithms. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst and Patrick so that the cluster recognizer uses any one of the well known algorithms because they simplify computation and accelerate convergence.

22. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Casey and taken in further view of Burges.

As per claim 10, Schaphorst and Casey do not teach the feature extractor comprises a discrete cosine transform transformer.

Burges teaches a method for extracting features from vocalizations for classification which extracts DCT coefficients during feature extraction (col. 20, lines 4-21).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst and Casey to extract DCT coefficients in the feature extraction because, as taught by Burges, it would suppress specific easy-to-identify distortions (col. 20, lines 4-21).

23. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Casey and in further view of Official Notice.

Schaphorst and Casey do not teach the cluster recognizer use K-means, SOM or Linde-Buzo-Gray.

However, the Examiner takes Official Notice that these algorithms are notoriously well known in the art clustering algorithms. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst and Casey so that the cluster recognizer uses any one of the well known algorithms because they simplify computation and accelerate convergence.

24. Claims 33, 35-37 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Weninger et al. (U.S. Pat. 6,546,368).

As per claim 33, Schaphorst does not teach a data structure holding records in a memory corresponding to the known bird songs specific to at least one of a region, a habitat and a season.

Weninger teaches a system for bird identification where the sound records for the birds are held in a subject record set which identify geographical areas the birds are at different times of the year (col. 4, lines 44-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to hold records in memory corresponding to a region as taught by Weninger because it would allow the songs to be easily searchable.

25. As per claims 35-37, Schaphorst does not teach the birds songs are stored in a modifiable memory which includes a port allowing uploads.

Weninger teaches modifying the memory of the system by uploading information through a port (col. 5, lines 55-65).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to store the birds songs in a modifiable memory as taught by Weninger because it would allow the database to remain current hence increasing its functionality.

26. As per claim 47, Schaphorst does not specifically teach the comparison engine produces the output in real-time.

Weninger teaches the classification of the sound is performed in real-time (col. 7, lines 37-52).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to have the system operate in real-time as taught by Weninger because it would ensure the system operates as quickly as possible to reduce the burden on the user.

27. Claims 34, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaphorst in view of Official Notice.

As per claim 34, Schaphorst does not teach storing the known bird songs in a replaceable memory such that the database can be modified by replacing the replaceable memory with a replaceable memory holding the modified database.

However, the Examiner takes Official Notice that removable memory such as memory cards and flash drives are notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to store the bird songs on a replaceable memory because it would allow specific databases to be conveniently changed without requiring the databases to be stored on the apparatus.

28. As per claims 41 and 42, Schaphorst does not teach using a shotgun or parabolic microphone.

However, the Examiner takes Official Notice that shotgun and parabolic microphones are notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Schaphorst to use a shotgun or parabolic microphone because it would ensure the best

microphone is used in a particular application such as where sensitivity is needed in a specific direction.

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Clemins et al. ("Application of Speech Recognition to African Elephant Vocalizations") and Franzen et al. ("Classification of Bird Species by Using Key Song Searching: A Comparative Study") teach classifying animals from their vocalizations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Sked whose telephone number is (571) 272-7627. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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02/07/08

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